



US006329119B1

(12) **United States Patent**
Suetsugu et al.

(10) **Patent No.:** US 6,329,119 B1
(45) **Date of Patent:** Dec. 11, 2001

(54) **NEGATIVE TYPE RESIST COMPOSITION**

(75) **Inventors:** Masumi Suetsugu, Minoo; Takehiro Kusumoto, Osaka; Naoki Takeyama, Settu; Masanori Shinada, Minoo, all of (JP)

(73) **Assignee:** Sumitomo Chemical Company, Limited, Osaka (JP)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) **Appl. No.:** 09/559,646

(22) **Filed:** Apr. 28, 2000

(30) **Foreign Application Priority Data**

Apr. 30, 1999 (JP) 11-124526
Sep. 8, 1999 (JP) 11-254630

(51) **Int. Cl.⁷** G03F 7/004

(52) **U.S. Cl.** 430/270.1; 430/921

(58) **Field of Search** 430/270.1, 921

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,585,218 12/1996 Nakano et al. 430/270.1
5,891,601 4/1999 Fukui et al. 430/170

FOREIGN PATENT DOCUMENTS

0827025 3/1998 (EP) .
09166870 * 6/1997 (JP) .

9166870 * 6/1997 (JP) .
10186660 7/1998 (JP) .

OTHER PUBLICATIONS

CA 127:154652.*
JP 09166870 A2, Jun. 1997 CA plusAbstract.*

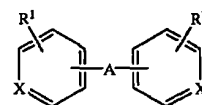
* cited by examiner

Primary Examiner—Rosemary Ashton

(74) *Attorney, Agent, or Firm*—Birch, Stewart, Kolasch & Birch, LLP

(57) **ABSTRACT**

A negative type resist composition is provided, which provides excellent resolution, satisfactory profile and outstanding process stability; is suitable for exposure using deep ultra violet ray; and comprises alkali soluble resin, acid generator, crosslinking agent, and a basic compound represented by the following formula (I)



wherein, A represents bivalent aliphatic hydrocarbon residue which may be optionally interrupted by imino group, sulfide group, or disulfide group, X represents nitrogen atom or C(NH₂), and R¹ and R² independently represent hydrogen or alkyl.

13 Claims, No Drawings